BEFORE THE WATER POLLUTION CONTROL
ADVISORY COUNCIL (WPCAC)

TRANSCRIPT OF PROCEEDINGS

Heard at Room 111, Metcalf Building
1520 East Sixth Avenue
Helena, Montana
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10:00 a.m.

CHAIRMAN DUDE TYLER; MEMBERS TREVOR SELCH, MITCHELL LEU, KATHLEEN WILLIAMS, RICHARD HOEHNE, STEVIE NEUMAN, KAREN BUCKIN-SANCHEZ, and MICHAEL WENDLAND

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WHEREUPON, the following proceedings were had and testimony taken, to-wit:

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CHAIRMAN TYLER: I'll call the meeting to order. We clearly have a quorum here. Do we need -- I think we're all about introduced by now. Does anybody need to know some names? We're getting there. Are we good on that?

Has everybody looked at the agenda? Any changes, or approval as written? Bob.

MR. BUKANTIS: I just wanted to point out now, and decrease the chances that now that I'm over 30 I'll forget to distribute this later. But I have a statement from Northern Plains Resource Council regarding fracking, so I should distribute that. And if you'd like, I could read that when we get to the fracking discussion or public comment.

CHAIRMAN TYLER: I don't think we need to make that a formal change. Shall we entertain a motion to approve the agenda as prepared?

MR. WENDLAND: So moved.

CHAIRMAN TYLER: Second.

MR. LEU: Second.

CHAIRMAN TYLER: All in favor, voice

vote.

(Response)

CHAIRMAN TYLER: All opposed?

(No response)

CHAIRMAN TYLER: Has everybody looked at the minutes, see any changes or modifications? Motion to approve.

MS. BUCKIN-SANCHEZ: Motion to approve.

CHAIRMAN TYLER: Second.

MS. NEUMAN: Second.

CHAIRMAN TYLER: Voice vote. All in favor?

(Response)

CHAIRMAN TYLER: All opposed.

(No response)

CHAIRMAN TYLER: Very good. Action items. Rod.

MR. McNEIL: Good morning. We're going to cover two areas of subchapter changes, proposed changes to Subchapter 6 to DEQ7. I would like to move forward with action items to the BER, so I'll give you an overview. We've had a series of briefings with you over the past year covering pretty much all of the aspects of how changes in DEQ7 were going to be derived, and we'll discuss

them in as much detail as you need today.

I'm going to cover Subchapter 6 first. The majority of these changes relate to the elimination of duplication or elimination of conflict with other regulations, and a few situations or references that are no longer in use.

We've eliminated the definitions of acutely toxic conditions and chronic toxicity. They're no longer used in Subchapter 6. We've modified the definitions of mixing zone and pollutant to ensure consistency, particularly with Subchapter 6, which is the MPDES permit requirements. We've modified the C-3 classification to clarify interpretation of nondegradation.

The next one is the removal treatment requirements for sewage and industrial waste from 17.30.635 because these also would be covered under Subchapter 12.

17.30.637 is being changed to eliminate duplication on mining regulations. I'll discuss the specifics on that. But basically it also relates to discharge of mining waste to surface waters. And one of the subsections of 637 was

eliminated to allow the dumping of snow from parking lots into State waters.

The last major point in Subchapter 6 is the elimination of the G-1 water body classification. This water body description actually covers containment facilities for pollutants generated by coal bed methane, and as such, it is not considered part of State waters.

As far as DEQ7 goes, we're looking at changes in nine major areas. We've incorporated two new pesticides required under the Montana Agricultural Chemical Groundwater Protection Act. We reviewed and verified twelve pesticides that were already in regulation, but they had not been reviewed, and new scientific information is available, so we went back and revisited that with the EPA to clarify that the standards were appropriate.

We have three new or revised aquatic life standards, eight new or revised human health standards. The biggest chunk of the changes is involved with the required reporting values. We've changed or added 236 values in DEQ7. We gave you a briefing on this in August, and have tried to apply those rules consistently throughout

DEQ7. We've revised six of the footnotes and adopted three new footnotes to cover things such as the changes to RRVs to clarify how various pesticides are quantified.

We've corrected the source of information used for 28 of the standards. This involves the source of information used for the standard itself. So for instance, we might have said it was a health advisory, but in the intervening ten years, twelve years, since it was posted, it's been upgraded to a nonpriority pollutant, or perhaps even a priority pollutant, so the categorizations have changed.

Also the twelve pesticides that we reviewed were all under the "I" class classification. That refers to the source of information being off the internet in 1998. And because we felt it was appropriate to review the science for all twelve, we've eliminated the "I" classification, and gotten, I guess we'd call it, hard health advisories we've worked out with EPA.

We're also deleting all references to narrative nutrient requirement standards, and we're eliminating the inorganic nitrogen and inorganic phosphorus criteria. This is because

we're going to be modifying and issuing a document that will specifically cover the nutrients in situations where it doesn't involve health effects for humans. So the standards for such things as nitrate, nitrite, and nitrate plus nitrite have been left in place for human health standards, but we're separating out the aquatic life aspect of it for nutrient standards.

The Montana Agricultural Groundwater Protection Act requires that we develop standards for any chemicals where there are no federal standards already in existence. In 2009 and 2010, the Montana Department of Agriculture found Fluroxpyr and Pyroxsulam in groundwater, so we developed standards for those two compounds.

CHAIRMAN TYLER: What are those, Rod, for laymen?

MR. McNEIL: Those are pesticides. Both are -- they're new, relatively new pesticides. They were introduced, Pyroxsulam was introduced about five years ago, and -- I'm sorry -- Fluroxpyr was introduced about five years, and Pyroxsulam three years ago. Pyroxsulam is a fungicide.

Unfortunately the trend seems to be that

once a new pesticide is released, it shows up in our water supply and groundwater supplies within three to five years. That's what the monitoring from the Department of Agriculture is showing.

MR. WENDLAND: So what are they specifically for, your pesticides?

MR. McNEIL: Fluroxpyr is used on wheat. I'm not familiar with specifically which --

MR. WENDLAND: Like Dude, I wanted to know which one we're --

MR. McNEIL: Again, I'm sorry. I can't do that, but I can get it for you immediately after this. It is used on wheat and canola, but I don't know specifically what predator.

MR. WENDLAND: The reason I'm asking is because it would be, I guess it would maybe in an area of the state where it showed up, not all over the state.

MR. McNEIL: Yes. Both of them have shown up in the northeastern portion of the state.

The twelve pesticides that we reviewed that have been on the books for anywhere between four and fifteen years are listed here: Clopyralid; MCPP; Metalaxyl; Methamidophos; Metsulfuron, methyl; Mirex; Nicosulfuron;

Oxydemeton, methyl; primisulfuron, methyl; Chlorothalonil; methyl Tribenuron; and Triclopyr.

CHAIRMAN TYLER: Say that backwards real fast.

MR. McNEIL: That's what five years of school will get you. All of these are fungicides or pesticides. We found that in doing the review, ten of the twelve had had their standards altered based on new scientific information, and so those changes are posted to the DEQ7. And I can provide a list of the predator specific for each of those if you would like.

MR. WENDLAND: I could find it.

MR. McNEIL: For aquatic life, we've got a new standard for chronic aquatic life for Acrolein, and we're revising Endrin. In 2010, we adopted the salt water criteria for Endrin rather than a fresh water criteria by accident, so mea culpa. And we revised sulphur to coincide with the Board's adoption of an averaging period for metals, and using hardness correction. So all of the other metals have already been corrected, and this was the sole remaining metal that sort of hung out there that the Board had asked us to do further investigation.

CHAIRMAN TYLER: You meant to say silver, not sulphur.

MR. McNEIL: Did I say sulphur? Sorry -- asked us to do further investigation on silver and interested parties which we've undertaken in the past year, so feel ready to move forward with silver in this regard.

We've got five new standards based on the Federal Safe Water Drinking Act, sulfone, bromate, chlorite, haloacetic acids, and 1,1-dichloroethylene, and we have one new standard based on the Clean Water Act, which is hexachlorocyclohexane. So these have been adopted under the Safe Water Drinking Act or Clean Water Act, and we're just moving to adopt them to make our standards compatible with the EPA recommendations.

Revising three of the existing human standards to correct errors and update based on existing scientific information. The first is Alpha emitters, metolachlor, and Aldicarb Sulfone. We can talk about the specific numerics. Basically alpha emitters have been increased by an order of magnitude; metolachlor has gone from 100 to 700 micrograms per liter; and Aldicarb Sulfone

was an error in listing, which what happened was that the listing for Aldicarb was loaded into DEQ7 when it was supposed to be Aldicarb Sulfone. There's one microgram difference in terms of the standards, and we're going to try and correct that error.

This one is a little tougher. We reviewed all of the parameters that are currently listed in DEQ7 as to their categorization. And if you remember, we gave you a briefing back in April about the issue of the EPA decision to use two simultaneous scales to describe carcinogenesis, and so what we did is we went through and checked everything in DEQ7 to make sure that whatever changes had been made didn't affect the classification.

We found that twelve parameters had in fact had their classifications changed, and this is just a -- You've seen this slide before, but this is a breakdown of the two carcinogen scales that are now in simultaneous use by the EPA. So the old scale which was initially adopted under DEQ7 has the "A," all of the "B" categories, and "C" as listed as carcinogens in DEQ7. We've added to that "H," "L," "L/N," and "S" categories out of

new cancer classifications to reflect the changes in the classification system that EPA is using.

Those compounds that have changed from carcinogenics to toxic include Alachlor; Atrazine; Butylate; Dichlorobenzene; 1,2 Dichloropropane; Gamma-hexachlorocyclohexane; and 1,2 Dibromo-3-chloropropane.

All of these compounds, when they went back to do the testing to reevaluate them, they found that there were interfering compounds that had caused a misread of whether the compound was carcinogenic, and it turned out to be other things in the complex of the compounds that had actually produced the carcinogenesis, so when they went back and redid the test, it was pure compounds, and in fact these compounds were not carcinogenic.

At the other extreme, we have compounds that went from toxic to carcinogenic. Those include Butyl Benzyl Phthalate; cadmium; and nitrobenzene. Those compounds that have changed from harmful to toxic are Phenol and Trichlorophenol. These classifications are important in terms of nondegradation application, so we wanted to reflect the information as accurately as possible.

MS. BUCKIN-SANCHEZ: Excuse me. What does toxic mean? That it will kill you right away?

MR. McNEIL: No. Toxic means that it has negative effects on the body, in this case human health, but it does not result in the generation of tumor cells.

MS. BUCKIN-SANCHEZ: So it could be neurologic versus carcinogenic?

MR. McNEIL: Yes, something that causes only neurological functions actually would be considered toxicologic. If it impacts the kidneys and shuts down the kidneys, for instance, that would be toxic in some concentrations. So toxicity is typically considered specific in a given concentration. Above that it's considered toxic. Below that it's unimportant or unclassified.

With carcinogenesis, you have a slope index which corrects for whatever concentration is there, so there is some sort of trigger value above which you will get cancer, everybody agrees; below that, you're increasing the risk of cancer.

MS. BUCKIN-SANCHEZ: Is that the one in 10,000 that you talked about?

MR. McNEIL: One in 100,000 is the value we apply here in Montana.

The next section is on RRVs. Required Reporting Values have not kept up with the changes in the standards themselves. There have been big changes in laboratory quantitization capability, and we wanted to reflect those capabilities.

I gave here as an example Acrylonitrile where the human standard is .5 ppb, but our existing required reporting value is 20 ppb, so you really couldn't tell that it was affecting human health because the requirement for the labs was set so much higher than the standard itself. So the RRVs's obviously need to be set low enough that we can determine whether there is a human health risk.

So in the, I guess it was the August meeting with you, we went over the proposed methodology for calculating Required Reporting Values, and we can go back into the details of that if you'd like, but all of the changes are noted in the copy of DEQ7 that you have that was distributed with the minutes.

What we do is we canvas a number of labs. In this case we asked for information from

eleven labs. Six complied and submitted information. We used all of the labs in doing the calculations. And the description of how calculations are done is in your handout. Basically we take the 75th percentile of all of the labs that submit for the technique, and then multiply that times 3.18, which is the recommended and standard from the EPA, to give you an error above minimum detection limit that's reported by the labs.

We've established the RRV rules. You have copies of those. Just to kind of give you an overview, of the 132 parameters with existing Required Reporting Values, 74 went up and 58 went down, of the natural minimum detection limits reported by the regional labs, so it was a pretty even split.

For many of these compounds -- I'll use cyanide for an example -- complexes in which they're found are extremely complex, and so it becomes very difficult to quantify to much lower limits than what are set by the standards, so it is really pointless to try and ask the labs to quantify below their minimum detection limit. We want reliable data to be reported. So this

hopefully reflects the best numbers to allow us to use RRVs in conjunction with reporting.

We have 28 parameters that we changed the classification for. I discussed this briefly before. It's a fairly long list. If you look at this, you can see that on some of these classifications, such as Alpha-chlordane, it was listed as a priority pollutant. In fact it wasn't. That was an error.

But the majority of these are just changes in classification, were a result from new EPA guidelines, or calculations of true health advisories with the support of EPA conducted here by the State. So anything that you see an "I" with in the old column has gone to a health advisory, and everything else is a change basically instigated by changes in classification by the EPA. I will read the list to you if you want me to.

We've deleted the narrative standards for nutrients for inorganic nitrogen and inorganic phosphorus, as well as Footnote 8. Neither of these parameters has any numeric values for human health or aquatic life, so they're pretty much pointless to have there as standards. And the

issue of nutrient standards is covered under ARM 17.30.637(1)(i), and that can be used in lieu of the standards as they appear in DEQ7, so there is no requirement for it to appear independently in DEQ7. And we are going to have a new document that will cover numeric nutrient standards which will be introduced early next year.

MR. HOEHNE: What happens if you get rid of your standards before the new ones come in? What does that do to the state as far as --

MR. McNEIL: Since there are no numeric values -- If you look it up in DEQ7, there is no numbers, so there is nothing that's disappearing. The goal is to try and fill that gap with actual hard numbers, which is what the DEQ12-A and B will address. And as far as the gap, since there is no numerics, it isn't really a gap in the first place. It doesn't exist.

MR. BUKANTIS: Could I jump in with one point of clarification? We still have human standard for nitrate, for example.

MS. WILLIAMS: And some human health standards --

MR. McNEIL: -- have not been eliminated.

MR. HOEHNE: So have nitrogen and phosphorus been set on the narrative standard for any communities or --

MR. BUKANTIS: Nitrate, nitrite, and ammonia standards have been set, but organic nitrogen and inorganic phosphorus may have been set by permit, but they aren't regulated by the DEQ7 because there is no numeric values.

In terms of outreach -- and we've tried to, I guess I'll say, be proactive here in terms of getting some inputs early to make corrections to DEQ7. We've given you three briefings starting in November of 2010 through August of both carcinogen, toxin, classification, RRVS derivation, and a general overview of the corrections that were necessary for DEQ7. And then we've posted three drafts online for formal public comment, and we've sent notices out to some 25 interested parties notifying them of the postings. And here are the dates for those postings.

In response to those postings, we've received thirteen comments, and I'll try and summarize the comments that we've received and the actions that we've taken. We have errors in

criteria listing for metolachlor because in September of this year they changed the standard, and of course we sent our standards out in July, and the manufacturer was very happy to point out that our proposed standard was incorrect because of the brand new regulations, so that changed the standard for metolachlor from 100 micrograms per liter to 700 micrograms per liter.

There were errors in categorization. This is a more complex issue. Paraquat is listed in IRIS, Integrated Risk Information System, as a carcinogen, but in point of fact, we did in our earlier postings change paraquat to a carcinogen; but again, the manufacturer contacted us and said, "Well, that was true back when, but that was changed, and here are the notifications to demonstrate when the change was made." And we verified in fact that it was not -- it has been declassified, and classified now as a toxin rather than a carcinogen, so that was changed as well in DEQ7.

We had some numeric errors in calculations of cyanide, nickel, cadmium, and aluminum. Those related to reporting values from various labs. We've made those corrections for

Required Reporting Values.

And then we had some errors in so-called CASRN numbers -- Chemical Abstract Services Registration Number is what that stands for -- and the numbers that we had were not necessarily wrong, but the CASRN numbers have been updated, so we have changed that to reflect those new values. So everything listed here has been corrected.

Then we also received some comments on cadmium as a carcinogen. The submitter noted that the route of exposure was inhalation, not water ingestion, but it is classified in IRIS as B1, which is known carcinogens, and that is the standard that we've used for listing, is how it's listed in IRIS.

Unfortunately there are a number of things in IRIS that have not been updated. When we checked with the EPA National Director of IRIS, he demonstrated that the risk assessment was based on inhalation of water vapor, such as showers or the working environment, and so the current IRIS classification of B1 will remain.

Our DEQ7 value is based on maximum contaminant level values from drinking water standards, not IRIS, and that for that standard

the route of ingestion is -- for that exposure, the standard is calculated based on ingestion in drinking water, and the studies likely considered it to be a toxin affecting principally the kidneys. They do not classify it as a carcinogen, but a Class 3 toxin.

So we have sort of a split decision within EPA whether this is a carcinogen or a toxin. The more protective position would be to consider it a carcinogen, and as it is listed in IRIS, which is how we've left it in DEQ7.

MS. WILLIAMS: So is it the mining industry that's concerned about that?

MR. McNEIL: Yes. Stillwater Mining was the commenter.

MS. BUCKIN-SANCHEZ: It is all forms of cadmium?

MR. McNEIL: No. There are some forms of cadmium which are carcinogenic in drinking water, cadmium chloride being an example, but that's because it makes it more readily biologically available as a chloride salt.

The route of exposure -- When EPA originally listed it as a carcinogen, which goes back to the mid 1980s actually, and earlier than

that, 1970s to through the mid-1980s -- was a concern in inhalation, particularly in miners, but what they found was that there was an associated risk with inhalation from water vapor. So 10 percent of the total risk is associated with inhalation of water vapor that contains cadmium.

And then the other area that we had comments on, we had three comments we received stating that setting RRVs too tightly creates unnecessary cost or a potential for false positives. Certainly if we set an RRV tighter, there is that potential to create false positives, but obviously we need to be able to measure to a level that reflects whether we're exceeding the standard.

So we did not make any changes based on that comment, which I guess I'll call it a fact of life, that it is going to cost more if you want to be able to measure down to the level of a standard in some cases. I think the fact that our corrections to the existing RRVs's were about evenly split, with more going up than down, is a fairly clear indication that our process was fairly balanced in terms of how we changed RRVs.

We also had two comments relating to the

multiplier that we used, 3.18. This is the multiplier recommended by the EPA in the documentation that you have in your supporting documentation. It is the most conservative position. Other offices within the EPA use different multipliers. The Office of Water used a multiplier of five; the Office of Pesticide Program uses a multiplier of ten.

To avoid difficulties associated with real world sample complexes, we took the more protective position and the position supported by the EPA in using a multiplier of 3.18. If we were to use another multiplier, RRVs would go up. So is that sufficiently protective, is the question.

MS. WILLIAMS: Isn't the Office of Water in EPA?

MR. McNEIL: Yes. These are different multipliers used by different offices within the EPA. So for the Clean Water Act, they're using a multiplier of 3.18 for calculating their equivalent of RRVs, what they call MLs; and then the Office of Water used a multiplier of five; and the Office of Pesticide Programs is using a multiplier of ten.

The problem with pesticides is that the

complexes that they're typically found in we found in extremely low concentrations, and the complexes that they're mixed in is very complex, so it makes it difficult to differentiate your signal to noise ratio for the compound that you're interested in. So they've used a much higher multiplier to be able to differentiate signal to noise and verify --

MS. WILLIAMS: Verify what?

MR. McNEIL: Signal to noise ratio.

MS. WILLIAMS: So what is the program the Office of Water uses for a multiplier? The Safe Drinking Water Act?

MR. McNEIL: Safe Drinking Water Act, yes. And then the Office of Pesticide Programs would be all of the stuff that you do under the Montana Agricultural and Chemical Groundwater Protection Act.

We had a very interesting comment from Hydrometrics, which pointed out that we are basing the Required Reporting Values on most protective standard, which in many cases is the aquatic life standard. And so when we do the numeric, that RRV is applied to both groundwater and surface water, but there is a huge dichotomy between the two.

For instance, with copper, the Required Reporting Value for aquatic life is 4,000 times lower than the groundwater standard.

So I think that's a very legitimate point, but it suggests that in order to properly apply the RRV, you have to know a lot about the local hydrology where you took the sample, and so it raises as many questions as it answers. And we do feel it's worthy of consideration. We do want to give this comment further consideration.

If you were talking eastern Montana, the separation between groundwater and surface water is typically pretty high. If you're out in the west, it's not. So it is just something we have to look at more closely and see what the total effects would be.

So to summarize the changes in DEQ7, we're ensuring actually a proper category assignment for all current standards; we've added two new pesticides under the Groundwater Protection Act; we've revised twelve human health advisories; added three aquatic life standards, or added or corrected three aquatic life standards; adopted or revised nine human health standards; updated the RRV values; and removed the references

to narrative nutrient standards for inorganic nitrogen and phosphorus.

For Subchapter 6, we've deleted unused definitions; we've revised the mixing zone definitions to maintain consistent definition between MCA and ARM regulation; we've modified the C-3 classification to clarify application of nondeg; removed water treatment requirements for sewage and industrial waste to eliminate duplication with technology based limits as described in Subchapter 12; and eliminated the G-1 water body classification. This is no longer necessary. They are not considered waters of the state.

We've limited the prohibition against dumping snow from parking lots into State waters; and we've eliminated the provision for requiring mining operations to prevent pollution to surface waters, as this is now covered by MPDES permit requirements in Subchapter 12, and also regulation under the Strip and Underground Mining Reclamation Act.

So that's what I've been doing. Do any of you have any questions on any portion of either Subchapter 6 or DEQ7?

MS. WILLIAMS: So if we asked you to zoom out and give us just an overview of who will be affected by these changes and how, what comes to mind?

MR. McNEIL: The addition of the two pesticides would certainly affect anyone who -- any location where it was found in groundwater supplies. So it might affect farming activities in a localized area where it's utilized.

Probably the largest overall effect is with the RRVs, because RRVs cannot be used by Permitting to set limits on how chemicals would be monitored.

It also sets a more stringent, in some cases, a more stringent requirement on laboratories in terms of the methods that they can use to report results, and the sensitivity that those results require. So there is potential to increase costs for many of the assays that would be covered by RRVs, so it's much more general. It would apply to anyone that's required to do monitoring basically.

Whether it would affect costs would be dependent on the specific methodology that was in question. As you saw, actually more RRVs went up

than down for those that already had existing standards. So that means it would actually loosen the standards in terms of cost analysis. So it won't loosen standards, it will loosen costs associated with conducting the assay, so it is a pretty even split.

MS. WILLIAMS: Then the elimination of the prohibition against dumping snow from parking lots into State waters, isn't there a lot of waste and sediments? Eliminating the prohibition of dumping snow from parking lots in State waters, isn't there a lot of potential contaminants in snow that's piled up in parking lots?

MR. McNEIL: Permitting specifically looked at this, and felt that there was not a loading issue by dumping snow into State waters, and hence their recommendation to remove that and allow that practice. I think last winter we had plenty of snow out west and --

MR. BUKANTIS: I'm sorry. I wanted to make a point of clarification. My understanding is that issue was covered someplace else; is that -- Jenny, is that true, on dumping the snow? Do you know?

MS. CHAMBERS: Jenny Chambers, Bureau

Chief, Water Protection Bureau, just for the record.

I don't believe that prohibition is located anywhere else, but there are other urbanized regulations or requirements in some of the larger communities in the multi-sector stormwater general permit. So if it's covered under a stormwater MS4 general permit, yes, a practice under the disposal of management of stormwater, which includes snowmelt, runoff, managing snow, any kind of precipitation, wet weather event impacts would be a practice that wouldn't be recommended or encouraged under that program and that permit program as a best management practice.

So the larger communities that may have trouble managing snow and impacts associated with how they would get it offsite or clear it within certain areas would have to find a different way to dispose of that, and don't necessarily use the practice of dumping it into State surface waters.

MS. BUCKIN-SANCHEZ: Jenny, that applies to communities of 10,000 people or more?

MS. CHAMBERS: Yes. Phase 1 regulations for stormwater under MS4 permitting is 1,000

people, or 100,000 people higher. Phase 2 was 10,000 or greater. So it is our big seven within Montana, plus some of our larger universities, Malmstrom Air Force Base; some of the counties, Yellowstone County, Lewis & Clark County, Gallatin County. So they're also covered under an MS4 permit. So the areas in the state of Montana that would have impact with snow removal or impacts with finding a way to manage it within their location are covered under the MS4 general permit.

MR. HOEHNE: This is just parking lots, not streets, or --

MS. CHAMBERS: Subchapter 6 specifically indicated to parking lots, but practices could have been done of managing from streets, or road sides, or road removal, but --

MR. HOEHNE: So salt or metachloride, you guys don't feel that's a problem dumping that into the -- that's in the salt, you don't think that's a problem putting it into State waters, if they're using salt to make chloride on their streets?

MS. CHAMBERS: Not necessarily stating it is not a problem or an issue, but it's something that they should manage and maintain.

We've also had numerous discussions with Montana Department of Transportation, highways, roadways. There is a balance between public safety and impacts associated with how you remove snow or address it versus the environment impacts, or the balance between the two.

So we would encourage practices or best management practices to control or prevent runoff or impacts to surface waters, but try to make that balance between public safety and impacts associated with using salt or metachloride, or gravel, or other kind of sediment that can also be considered a pollutant.

MR. SELCH: We've had a few issues in the past with the Department of Transportation on some bridges where they've used a lot of metachloride and it's affected vegetation survival, and obviously they've commented the same way using the Best Management Practices, but when it comes down to human safety, fish kind of take a back seat in those situations.

But that was kind of the same thing I was thinking along with this. I don't know if it restricts it to fresh snow, or if it is just clear the parking lot after there has been sand, gravel,

and chloride put down, but I'm assuming it's just BMP's.

MR. McNEIL: You certainly would certainly want to apply BMP's, Best Management Practices.

MS. WILLIAMS: I have one more question. Your second slide, the last bullet says that Subchapter 6 overview included modification of the C-3 classification to clarify interpretation of nondeg. So what caused the clarification to be necessary? What was unclear, I guess?

MR. McNEIL: What happened was when C-3 classification was put in, a portion of the definition was left out that's used in all the other classifications. So if that had been incorporated at the time, it would have been clear, but this --

MS. WILLIAMS: So it is like a typo?

MR. McNEIL: Well, an omission. Another sentence would have fixed the problem with the C-3 classification. It was just an omission at the time that the regulation was adopted.

MS. WILLIAMS: Thank you.

CHAIRMAN TYLER: Bob, help us with our mission here. This is an action item, and you

wish for our approval that this be carried on to the Board --

MR. BUKANTIS: I think --

CHAIRMAN TYLER: -- as presented by Rod?

MR. BUKANTIS: Yes. I think what we're looking for is we'd like to move forward with the suggested changes to Subchapter 6 in DEQ7 as an action item to initiate adoption, but as an action item for the Board of Environmental Review at their regularly scheduled meeting on December 2nd. So I guess we would request a motion to --

MS. WILLIAMS: Question about that. So there is something you're further researching, which was the -- was it Tetratech? Somebody commented on the --

MR. McNEIL: Hydrometrics, yes. We feel that that's going to take quite a bit of research to look into the issue of groundwater versus surface water application of RRVs. So I guess I'll say my feeling is that we move ahead with it as is, and then look at it on a specific basis by area for future consideration. It is too big an issue to address with this package.

MR. HOEHNE: Another question, and maybe these ladies could answer. And I'll apologize if

this is the late hour. But removing the nutrient standards or the narrative nutrient standards just has me a little bit worried right now, mainly because we're working with the Nutrient Work Group, and I don't think that's ever been brought to the Nutrient Work Group. And I don't know in my mind if it's good or bad, whether that's gone away.

MS. MASSMAN: Claudia Massman, Attorney for DEQ. We took a look at DEQ7, and when you look at total nitrogen and phosphorus, there are no numbers there, and all it does is have a footnote that refers you to the narrative water quality standard that is in Subchapter 6. So by taking reference, you know, eliminating total nitrogen and total phosphorus from DEQ7, you're not eliminating the narrative standard. That's applied independently, so that's still there.

MR. HOEHNE: So it's still in six?

MS. MASSMAN: It's still in Subchapter 6. We just it took out of DEQ7 because it's kind of meaningless. It just refers you to the narrative standard.

MR. HOEHNE: Duplication. Okay. All right.

CHAIRMAN TYLER: Question answered?

MR. HOEHNE: Yes.

CHAIRMAN TYLER: Other questions for Rod or Jenny?

(No response)

CHAIRMAN TYLER: We have here a request for approval that DEQ7 review -- or updates to DEQ7 be carried to the Board of Review; do I have that right?

MR. BUKANTIS: Board of Environmental Review.

MS. WILLIAMS: And that will start its own public process, formal public process and comment?

MR. McNEIL: Yes. The public comment process to date has been, I'll call informal. Just fix as many things as we can in advance of coming to you for requests for function of action items. So that was the purpose of the informal, and it helped us catch a few mistakes and very recent changes in standards that we were not aware of. So it was helpful.

MS. WILLIAMS: I'll make a motion that the Council supports DEQ moving forward into the next phase towards consideration by the Board of

Environmental Review, including the consideration of the Hydrometrics comment as appropriate. Does that work?

MR. BUKANTIS: I think the Hydrometrics comment -- Just to clarify, I think that on that RRV thing, it is just a matter of pick it up next go around.

MS. WILLIAMS: That's why I said "as appropriate." Weasel wording. Is that close to what the group thinks?

CHAIRMAN TYLER: Is there a second?

MS. NEUMAN: Second.

CHAIRMAN TYLER: Discussion? Does everybody sort of get what Kathleen threw in there with the clarification portion of her motion? Is that clear?

MS. NEUMAN: I think the main jump that he has proposed to us is kind of cleaning it up. We go back in, and we make mistakes, and he's done I think a good reporting job of trying to clean it up and get it current.

MR. BUKANTIS: There is something else that, just for transparency, that I think I'll throw out here at this point, since we're talking about RRVs, is we're going to look at some other

things that came up around the RRVs later today and talk internally about it, because there may be -- EPA has come out with a recent review of a proposal that may influence how we do RRVs.

So I guess we try to -- without really understanding where EPA is going with it, may influence what Jenny needs in her program, and so there is some chance that we may pull the whole RRV thing from this package before we go to the Board, just because there was a couple of these questions that came up last minute.

So that puts us in the position of either saying, "Okay, we've done a lot of work in effect to bring this forward. We think that there might be some other tweaks. So should we then go forward with what we have right now?," because all of the stuff, a lot of the stuff is a work in progress in terms of updating these things as we have improved science and understanding; or should we then delay, go forward with it better than it was before this rulemaking, and then take it to the next level the next time we adopt the DEQ7, or do we need to incorporate what we have and delay for new information. I'm not sure if I said that right.

CHAIRMAN TYLER: Are you asking, Bob, does this motion tie your hands in some way?

MR. BUKANTIS: No. So yes, I don't mean to confuse it, which is perhaps what I did more than help, but I just wanted to let you know that we're looking at some other issues. Right now our plan is to go forward with the package as-is to the Board in December, but there are a couple things that we want to take a hard look at, may want to tweak, none of which by the way are standards per se. They're all kind of associated pieces.

MS. BUCKIN-SANCHEZ: I would like to say I think you did a really good job of bringing everything up to date, clarifying and adding as necessary to get to the benchmark where we are right now. So I'm supportive of the motion.

CHAIRMAN TYLER: Motion and second. We can do a voice vote. All in favor.

(Response)

CHAIRMAN TYLER: All opposed.

(No response)

CHAIRMAN TYLER: Thank you, Rod. Motion carries.

(Recess taken)

CHAIRMAN TYLER: Shall we reconvene. We've got everybody here. And it's time to select a Chair for the year 2012. And let me just say it has been my honor to serve as the Chair this brief period of time, and I'd love to see some new energy and blood be inserted into the leadership position here. Are there any nominations?

MS. BUCKIN-SANCHEZ: First I want to go ahead and make a motion of appreciation for the work that you've done, Dude.

CHAIRMAN TYLER: Thanks.

MS. WILLIAMS: Second.

CHAIRMAN TYLER: Thank you. I don't think that motion needs to be voted on. That was very nice. Thank you very much.

MS. WILLIAMS: I think we should vote on it.

MR. HOEHNE: Dude, it's my understanding that maybe you talked to somebody here that would like to take this on, and --

CHAIRMAN TYLER: Yes, I have. I've been working on the sidelines diligently.

MS. WILLIAMS: We have a motion on the floor.

CHAIRMAN TYLER: Yes, ma'am. All in

favor of this wonderful compliment.

(Response)

CHAIRMAN TYLER: All opposed.

(No response)

MS. WILLIAMS: Thank you, Dude, for your service. I'll make a motion that -- I think all of us were quite impressed when Trevor took over the responsibilities of Chair when Dude wasn't able to attend the meeting, and I would suggest, I would nominate Trevor for Chair -- is the term for a year for the next Chair --

CHAIRMAN TYLER: I believe so.

MS. WILLIAMS: -- for the next Chair of the Water Pollution Action Advisory Council.

CHAIRMAN TYLER: We don't second nominations, correct?

MR. BUKANTIS: Yes.

CHAIRMAN TYLER: Are there any other nominations? Thank you, Kathleen.

(No response)

CHAIRMAN TYLER: Any other nominations?

(No response)

CHAIRMAN TYLER: Any other nominations?

(No response)

CHAIRMAN TYLER: Trevor, it's looking

like we could probably do this by voice vote. All in favor of Kathleen's nomination.

(Response)

CHAIRMAN TYLER: All opposed.

(No response)

CHAIRMAN TYLER: Very good.

MS. WILLIAMS: Congratulations.

CHAIRMAN TYLER: For those of you who don't know my guilt factor, I'm still paying off for the time I spent 35 minutes on my cell phone while somebody was presenting here, at my office, and Bob finally had to run into the back and send me an email to say that my voice was carrying over the meeting and ruining the presentation. But Trevor is welcome to continue the tradition of the Chairperson bringing things like bacon and eggs, and sweet rolls, and just your basic stuff.

Bob, you've got me on the agenda as still being Chair here, but shouldn't we turn it over to Trevor at this point?

MR. BUKANTIS: It is still 2011. Trevor is not until 2012. I'd say it's up to you and Trevor.

CHAIRMAN TYLER: We'll just shoot for the finish line here. The next action item is the

first meeting date for 2012.

MR. BUKANTIS: And just yesterday -- Well, just to go over the basics again, just so you understand, it gets just a little bit complicated because how we schedule these is we schedule them a month in advance of the Board of Environmental Review's regularly scheduled meetings, and so it is a little bit complicated because the Board doesn't have a calendar for 2012 yet.

So what we're trying to do is just anticipate when we expect that they're going to have their first meeting, and stick our meeting about a month ahead of the Board's first meeting, so then when we get back together early next year, we'll know the Board's calendar at that point, and be able to decide on our calendar for 2012.

So right now we're thinking that the most likely date for the Board's first meeting in 2012 is going to be January 28th. That doesn't make sense.

CHAIRMAN TYLER: That's a Saturday. The 26th or 19th.

MR. BUKANTIS: So let's assume that John meant January 27th.

CHAIRMAN TYLER: A Friday?

MR. BUKANTIS: Yes, because the Board usually meets on Fridays. And then if we stuck that a month ahead, we'd be right between Christmas and New Years, so I'm going to suggest that we try January 5th for the first date.

MR. WENDLAND: What day is it?

MR. BUKANTIS: It's Thursday, the first Thursday in January 2012.

MR. WENDLAND: I would prefer a different day besides Thursday for me, but I can adjust.

MR. BUKANTIS: Well, we historically have always met on Thursday.

MR. WENDLAND: That's why I said it's fine. I'll adjust.

MR. BUKANTIS: But I don't think there is any need for us to meet on Thursday. I think it's entirely up to the Council.

CHAIRMAN TYLER: Is that all Thursdays?

MR. WENDLAND: Yes, it's better.

CHAIRMAN TYLER: What about everybody else?

MR. WENDLAND: Which is only four times a year, so it's not a huge issue.

MS. WILLIAMS: I'm sorry, the date was?

MR. BUKANTIS: I think there is two proposals on the table right now basically. The first proposal is that the first meeting for January 2012, or our meeting for January 2012 would be on July 5th; and then I think Mike went further and proposed that in January we consider moving WPCAC meetings to another day other than Thursday.

MS. WILLIAMS: That's fine.

CHAIRMAN TYLER: Wednesdays are better than Fridays for me usually. Friday January 6th. So Friday January 6th, shall we do that?

MR. WENDLAND: Yes.

CHAIRMAN TYLER: Then we can't set the rest of the calendar until that date.

MR. BUKANTIS: Right. We'll set the rest of the calendar then, so we'll have the printed schedule.

CHAIRMAN TYLER: Mark, can you sub for Dean and give us a TMDL update.

MR. BOSTROM: Certainly. My name is Mark Bostrom. I'm the Bureau Chief of the Water Quality Planning Bureau.

On September 27th, Judge Donald Molloy

signed a settlement agreement between EPA and DEQ as Defendants, and Plaintiffs Friends of the Wild Swan. A settlement agreement was struck for EPA and DEQ to complete TMDLs for 664 pollutant water body combinations. This list of 664 is an attachment to the settlement agreement.

There is a few provisions in the settlement. The number 664 is an absolute number, so if we go into TMDL development and we find that there is not an impairment there, and thus a TMDL is not required, we'd have to go out and find a replacement. So it is 664 absolute. So it will be -- the replacement thing is not too big a concern for us.

We're basing our projects now on watershed, and we have been for quite a while, so it's not a huge change. Oftentimes when we go into a watershed that has metals impairments, for instance, we'll find that two or three of the metals, or some percentages of the metals are actually not exceeding standards, but then we'll find others that are. So this does kind of balance out.

The watersheds that we're going to be working on are primarily the Columbia and Upper

Missouri. The Plaintiffs were looking for a structured settlement that focused on threatened and endangered species, and the bull trout and west slope cutthroat in the Columbia and Upper Missouri were kind of a prime thing that they were centered around for their goals.

Basically our process that we developed over the years involves using pollutant groups. So we'll go into a particular watershed, and group and lump all of the pollutants of a similar nature, so for instance nutrients. We would look at the watershed kind of holistically for nutrients, and rather than focusing in on the individual phosphorus here, nitrogen there, we would take kind of a holistic approach, and look at nutrients en masse for the watershed. So the major pollutant groups are nutrients, temperature, metals, sediment.

Within the consideration that we had in the settlement agreement was a concern that we had sufficient resources to apply our TMDL resources towards other areas as priority. So this 664 is an absolute list.

And it is based in Columbia and Upper Missouri, but we also recognize that we have some

very high priorities in the Powder, Tongue, and Rosebud area. So we have sufficient resources to work through the salinity issues that are key in that area as certain facets pass through. We've got a standards package at EPA that's awaiting approval. That's a key dependency on us moving forward with the next phase, which would be some additional monitoring, and then TMDL development on those impaired waters in that region.

So that is pretty much the update. I guess if you guys have any questions. I kind of did this impromptu. I didn't know Dean wasn't going to show up to work today.

MS. WILLIAMS: So 664 from here on out, cumulatively from the original lawsuit?

MR. BOSTROM: It's 664. A good portion of those were from the original lawsuit. I would say about 60 percent. 40 percent have been identified as impaired since 1996. So the 664 is kind of a combination. Like I said, it was a watershed holistic approach, and one of the examples we gave in the testimony was that like in the Gallatin, for instance, there is six water body pollutant combinations for nutrients in the 1996 list, but there is actually 16 in the 2006

list, so we're going to go in and we're going to finish all of the 16 rather than doing them piecemeal.

MS. WILLIAMS: So the lists has the names of the water bodies and TMDL?

MR. BOSTROM: Yes, and the pollutants.

MS. WILLIAMS: So are there any that have been done of the 664?

MR. BOSTROM: Yes. Right now I think we've got -- By the end of the year, our target is to have about 318 of the 664 done. So we've got -- A lot of these were already in the works. We had projects that were fairly well along. So this is really just kind of hitting the ground running.

MS. WILLIAMS: Is there a deadline?

MR. BOSTROM: Yes, December 31st, 2014.

CHAIRMAN TYLER: Mark, it was the bull trout and the west slope cutthroat that were the primary -- that's the subject matter from which this all came?

MR. BOSTROM: Yes, that was certainly the focus of the Plaintiffs, mostly environmental groups, and it actually wraps back and works better, I would say, than the 1996 list did in the previous settlement. If you look at the factors

for prioritization that they have in the Montana Water Quality Act, threatened endangered species is one of the considerations. So it does very well with the prioritization scheme that the Legislature gave us.

MS. BUCKIN-SANCHEZ: Do you have enough staff to complete the work by the deadline of 2014?

MR. BOSTROM: We believe so. We do now. I see a lot of funding cuts maybe on the horizon particularly at the federal level. I've seen draft budgets for the House of Representatives that would show about a 14 percent cut on 319 and 106. That would be pretty tough.

Our efficiency right now is pretty high. With a normal staff attrition rate of about 10 percent a year, we can go through this and hold certain positions open in the program to maintain a full staff of TMDL writers.

MS. BUCKIN-SANCHEZ: It is really critical because the communities that are trying to meet permits are trying to guess what the permits are going to be, and so it is such a one step at a time. So that's why I asked that question.

MR. BOSTROM: That's an important question. And I work pretty closely with Jenny Chambers. We're both affected and impacted by the cuts to 106 because 106 is the Clean Water Act. 106 money is generally what funds the state assistance grants, and we both get 106 money to fund our programs, both Permitting and the planning TMDL shop.

MS. BUCKIN-SANCHEZ: So then the Legislature meets like that next month after that, January?

MR. BOSTROM: January 2015. Yes. And as a part of the Senate Bill 267 from the last Legislature, we have reporting points to the EQC to report on our progress, but that was for the portion of the Montana Water Quality Act, which is 75.5.702, I believe, that we had a modification to that portion of statute that allowed the settlement to go forward.

MS. BUCKIN-SANCHEZ: Thank you.

MR. WENDLAND: I think Karen's question is quite interesting because of the staff, because when they started the TMDLs back in 1996, the windshield surveys and everything else showed up, and unrealistic numerical values were placed

there, and it seemed like it was a huge wreck. So what she is saying is: Is it going to be done right with the staff?

MR. BOSTROM: Yes. Our process has evolved dramatically since the early days, and they continuously improve. I came into this position through Quality Assurance, and that continuous improvement is a theme that I just beat into the heads of my staff. We have to do something better tomorrow than we did it today.

And I guess as an example of this right now, we're finishing up a public comment period for the assessment method that we would use to make a determination of the impairment, and this body has seen some of the packages that we have had that changed standards, whether it was the addition of frequency to the metals to better align with 304(a) criteria, those inevitably will flow down and affect how the assessment method works, and then how the TMDL is going to be written, and then how the permit is going to be applied.

So when there is a change in standards that has a flow through effect all the way through the water quality management process, we have to

adjust.

CHAIRMAN TYLER: Thank you, Mark. That's some pretty serious stuff. Questions for Mark?

(No response)

CHAIRMAN TYLER: This is not an action item. It is an update. Thank you, sir.

MR. BOSTROM: You're welcome.

CHAIRMAN TYLER: So how are we going to do the fracking discussion? It is not an action item. We've got Mitch and Jenny both.

MR. LEU: I was thinking I could give kind of a background on what things looked like, and then whatever Jenny has. She'll bat cleanup. And the only reason I volunteered to do this is I kind of half know what it was like 25 years ago, what oil wells looked like. I used to be in the business.

So I, three lifetimes ago, designed and engineered hydraulic fracturing jobs for a stimulation company, so I kind of have a little bit of background in that. So we'll give you guys the Oil Well 101, I guess. And keep in mind this is from 25 years ago. Things might have changed a little bit, but I don't think it has changed too

much.

First of all, just a little background on what an oil well looked like when I started in the business. I had never even seen one before that. My background is actually chemical engineering.

But a typical oil well starts off, they start drilling a hole in the ground. They'll typically, at least in my area, they'll go down 250, 300 foot with like a fourteen inch hole, place twelve and a half inch metal pipe into that hole, cement that into place by pumping cement down the casing. It flows to the bottom of the well, comes back up the annulus so it seals the outside of that oil well between the dirt and the steel, and that's designed to protect the surface water.

And then from there, they'll continue drilling with a smaller bit inside that steel casing, and they'll go anywhere from whatever total depth of the well is supposed to be, 1,000 feet. Some of the wells I worked on were 27,000 feet plus, 35,000, depending on where you're at. If you get a really, really deep well, then they may go with a smaller casing inside of that, and

continue going down. They'll drill to a certain value, and then do casing at that point in time.

But the internet is really bad as far as showing pictures of what things look like, but here this represents the surface casing part of it where they'll drill a hole, put the surface casing in, cement that in place by pumping down the surface casing, turns the corner and comes up. As soon as you start seeing concrete coming up out of the hole, then they know they've got a fairly good cement job. And then they'll continue drilling. Once that sets up, the outside, the next hole, put casing in that, fill that with concrete, and continue on down.

Once they end up with an oil well, basically they have a piece of steel in the ground, and there is no way to get anything out of that.

So what they'll end up doing is lower a specialized gun down the last set of casing. It has a bunch of, for lack of a better word, bullets in it that will shoot out and puncture that casing into the various zones that the oil or gas is located at, and those are usually called perforations for -- They can do a fairly

specialized procedure to do those. They'll get a quarter inch or three eighths of an inch hole through that casing.

CHAIRMAN TYLER: What explosive does that, Mitch?

MR. LEU: I'm not exactly sure what the explosive is, but it is kind of similar to firing a gun. It actually vaporizes the steel as it goes through, and perforates the concrete, and goes into the formation a little bit. They have what are called wire line services, great big huge cable trucks, so to speak, with a very fine way of measuring how much cable goes down that hole, and they'll dangle various tools from that so they know exactly where they're at at any given time. It's a pretty cool system until things get stuck or something like that.

Anyhow, that's kind of the basics of oil well construction. Once they're all done drilling and perforating, and they have a potential for actually finding oil, then they'll put what's called a Christmas tree up on top, and that's pretty much what everybody is used to seeing, is a way of holding another pipe inside the other pipe where you see either the pump on top or something

similar to that.

And that's just a way of holding that pipe in place, plus being able to access the annulus between it, or the pipe itself, depending on -- you sometimes get natural gas out of the annulus and oil out of the pipe, but there is various ways of doing that.

And that Christmas tree also has the ability to shove rams into the system to block anything off in case there is a blow-out for any reason. Exxon is very well aware of how those things work.

So once that has been put in place, and we call in a hydraulic fracturing crew to come in, and basically you're pumping liquids into the rock at a high enough pressure that it physically breaks the rock in half. It creates fracture through that rock.

And the reason they want this fracture is you can't drill and expect to get 50 barrels a minute of oil out of a little hole like that when it's facing pure rock. You need some sort of conduit to get that oil from the formation back into the oil well. So they'll go in and fracture the rock, make a crack; and in the process of

doing that, they also inject sand in with the fracturing fluid, and that sand holds that rock open and allows the oil to flow through that.

So 50,000 foot level, they'll go in, high pressure, crack the rock, open it up, put sand in it, so when it does eventually -- pressure bleeds off, the sand holds that rock open and allows a pathway for the oil to flow through.

CHAIRMAN TYLER: 50,000 feet being almost ten miles?

MR. LEU: Well, 50,000 foot level, just birds eye view, overview, not actual physical feet. But I'm not sure if there is any oil wells that deep or not, but --

MS. WILLIAMS: Do you want to mention that a lot of this is horizontal? I mean they actually --

MR. LEU: Back in my day we did just straight up and down oil wells. They were just starting to do the horizontal drilling. And what they've done in the shale, gas shale, they'll actually -- once they're done drilling horizontal -- or vertically, they can put a spin and a torque on that drilling string, and start bending that drilling string so it starts going horizontal.

And they can actually drill horizontal from a couple miles up, and out into the shale, and that also allows a lot more room for extracting the oil or gas out of that. That's been the rage lately.

Back in my day they were just starting to be able to have the technology to do that, and they actually have GPS units in the drilling head so they know exactly where they're at, and what depth, and it is pretty amazing stuff.

So I mentioned they pump fluids in, and there is six general fluids that are used: Gelled water, cross link gelled water, nitrogen foamed water, carbon dioxide foamed water. They actually gel diesel up, and in limestone formations they use hydrochloric acids that actually dissolve the limestone to create holes.

CHAIRMAN TYLER: What is gelled water?

MR. LEU: Why do they gel water, and what is gelled water? When you're pumping large amounts of fluid in a fairly small pipe -- Most of the process is carried through two and a half inch pipe. They're pumping the high pressured liquids down that. Gelling the water is like adding jello to the water. If you felt gelled water, it is slick, and that slickness reduces the friction

when you're pumping so you don't have to have that high of pressure on top of the well to make high pressure down below. You aren't losing pressure, so to speak.

So I'll kind of go into exactly what gelled water is, or at least what we used back in the day. They added 2 percent potassium chloride to the water, or used formation water. The potassium chloride, if there is any clay in the formation, it prevented the clay from swelling up and constricting off whatever holes that you were trying to propogate in that particular formation.

The gel itself, we used guar gum and hydroxypropyl guar. And guar is a bean that they harvest and extract the starch basically out of it. Hydroxypropyl guar is kind of a hydro treated starch that they inject with steam, and kind of give it a little bit different property. It is a little bit more stable and has just been slightly modified. It is like hydrogenated oil. It changes it just a little bit to affect the particular properties of it.

They add about -- Average was about 40 pounds of gel to 1,000 gallons of water, to give you an idea of the concentrations associated with

that.

We also added one gallon of clay stabilizer, and I have no idea what that stuff was. It helped stabilize the clay. The ingredients were, in most cases, trade secrets of whatever company you worked for.

We also added a gallon of surfactant, which is basically soap. That allowed the water to either attract the oil, or mix with it, or the ability to break away from the water itself. The enzyme breaker is basically an enzyme that degrades the guar gum into something a lot wider. After a day sitting in the oil well, it breaks down that starch into something waterier, so it is not carrying the sand out of the formation. It flows around the sand a lot easier.

In order to make a higher viscosity material to hold that sand in place while you're pumping it, if you add sand in water, it falls right to the bottom of the water. You want something thick enough that it will hold that sand in place while you're pumping it in. And we added a cross linker, which is usually a metallic material like a titanium salt that actually formed cross links with the starch structures. It made

kind of a 3D.

Usually a starch structure is a long single chain floating around in the water. That allowed a bunch of single chains to form complex structures that gave you viscosities well above 10,000. You could take gelled water, and it looked like runny maple syrup consistency. You add the cross linker to it, and you could physically pour half of the thing out, and flip the beaker up, and it would go back into the beaker. It looked like the thing from the other planet. We could get viscosities just amazing amount.

But the reason you wanted that high viscosity is we would add up to eight pounds of sand per gallon of water in order to get the proper concentrations to hold those cracks open. So to be able to turn, go down the oil well, turn the corner into a small little perforation, you needed that high viscosity to carry that sand out. Otherwise it would just impact the bottom of the well and fill it up.

As opposed to using gelled water, we also used a foam. It looked like shaving cream foam, and basically was just another way of

achieving a high viscosity. And it consisted pretty much of the same stuff, only we added a foamer -- which is soap again -- and we also added nitrogen or carbon dioxide to achieve the bubbles needed, and we added enough nitrogen to produce usually what's called a 70 quality foam, which means that at formation conditions, 70 percent of that volume is bubbles. And basically it looked exactly like shaving cream.

Nitrogen was pretty easy. Carbon dioxide was a little touchier. We would actually pump liquid carbon dioxide in with the water, and it foamed on the way down as it warmed up, and CO2 is a little scarier as far as that goes.

Again, I mentioned pressures. Some of the shallow wells that we did of 6,000 feet. Surface pressures, we used around 3,000 PSI to achieve enough pressure to actually fracture the rock. We did a couple wells up in Wyoming, deep wells, where we actually got up to 32,000 PSI on the surface in order to achieve enough pressure to fracture the rock. Those were scary jobs. There is no room for error on that.

CHAIRMAN TYLER: How far were you going down, Mitch, or in your experience, how far were

you going down?

MR. LEU: Most of the stuff we did was in the 6,000 to 8,000 foot range. We'd go down 35,000 feet, close to seven miles.

CHAIRMAN TYLER: Do they know how deep the Bakken goes?

MR. LEU: I'm not sure what the depth of most of that is. I think it's fairly shallow relatively speaking. Anyhow, that's Oil Wells 101.

MR. McNEIL: I was going to say the Bakken runs around 5,000 to 8,000 feet.

MS. WILLIAMS: It's thicker in North Dakota than it is in Montana.

MR. LEU: It depends on which way the formations are tilted. We did some work on the Niobrera formation in Colorado where we were pumping at 5,000 feet, and you could drive 60 miles down the road, and actually look at it in the road cut. It is quite a bit of folding going on in that particular area.

MS. WILLIAMS: So then did you withdraw the liquid?

MR. LEU: Usually once we got done, we'd close the valve, let everything stabilize for

about a day, and let some of the pressure bleed off, because if you open that valve right away, it would just flow right back out as fast as it went in, and all your sand would be gone. You want the pressure to slowly bleed off so that the fracture can actually heal, and somewhat embed into the sand that you injected into it, so it traps the sand in place.

CHAIRMAN TYLER: When in history did fracking -- When they just quit digging a hole in the ground and actually fracturing the rock?

MR. LEU: It started in the 1930s or 1940s, so it is a fairly old way of doing things. Most of the early stuff was either acid or like a gelled water, not too much more complicated than that. As people learned more about what is going on down there, then they could increase viscosities, and learn a little bit more. Plus pumping technology has improved quite a bit.

MS. WILLIAMS: So you pull the oil out, or natural gas, I guess, and the liquid comes out with it, and then it's separated from it?

MR. LEU: Back in my day, the next day the work over crew would basically open the valve and let it blow into a clay lined pit, all of the

liquids. I believe nowadays, it's actually a plastic lined pit of some sort, or steel container, or something along that lines.

MS. CHAMBERS: Yes. They try to capture all of the hydraulic fracking when they pull it back out, and then probably dispose of that material. There is some residual still left down in the actual fracking seams.

The bigger issue -- And I guess I could jump into that a little bit -- as far as how it's regulated or how it's managed, is when you're actually in production, and they're using the fracking seams, and they're actually drawing out natural gas or oil, mainly natural gas in Montana, and then they get natural gas. And plus there is water in those locations, so then they have to have a practice or procedure to separate the gas from the actual wastewater that's generated from that process.

So from DEQ's viewpoint, the area that we regulate is the discharge or management of that water from the produced water well, or pulling and separating out of the natural gas process.

We currently have about 33 permit holders under the produced water general permit,

so we have a general permit under the MPDES, or federal -- Montana Pollutant Discharge Elimination System program for coverage under that general permit in order to meet requirements and have permit coverage if needed, if they need to discharge that water back to State surface waters.

Predominantly a lot of them use off channel storage ponds, or they use a storage pond that possibly would then settle, and then that water may overtop, and go down ephemeral drainage that would have ultimately hit State waters. So that's the permit they're holding is that overtopping from stormwater or rain events, or snowmelt, and then that goes in ephemeral drainage to actually hit a State surface water at one end.

The predominant focus is to protect the beneficial uses for livestock or agricultural uses, so farmers that may use it for feeding or the cows may drink the water or stock pond for the farmers in the area as far as cows using it for livestock drinking, or using it for land application, if they want to use for irrigation purposes. That's mainly the focus of the water quality protection that we have within that permit.

MR. LEU: In most cases, that's salt limited, isn't it?

MS. CHAMBERS: Yes, salt and -- EC, electric conductivity, and SAR in the Powder and Tongue, where we have those water quality standards in place. Others in the state, it's mainly TDS, total dissolved solids, and some salt, constituents associated with that.

MS. WILLIAMS: That's coal bed methane extraction, right?

MS. CHAMBERS: It's both. We have -- Our coal bed methane dischargers have individual permits, and then they have a lot more stringent regulations based upon where they're located, and that's a direct discharge to State waters. We have a whole subsector of produced water, which is natural gas, and the waste stream associated with natural gas is different than coal bed methane practices and procedures. So we see both in Montana.

The other area within DEQ, just so you're aware, we have a lot of tracking and management of stormwater construction or development of these ponds for these well construction sites, and to ensure that if they're

disturbing roads or putting these ponds in a central location, they have to get coverage under the stormwater construction general permit, so that would provide impacts from sediment or erosion controls that could ultimately get back into our State surface water.

North Dakota utilizes an Energy Pollution Control Act exemption, and exempted that energy development industry from getting stormwater construction permit coverage, and other possible stormwater industrial permits. In Montana, we kept that on the books and regulate them the same way we would do any other activity in the state.

MS. WILLIAMS: Energy what act?

MS. CHAMBERS: Energy Pollution Control Act, I believe. It was -- I'm thinking it was the 2006 to 2008 time period, but don't quote me on that.

MR. LEU: That's more or less like a BMP type --

MS. CHAMBERS: Right, stormwater construction is a BMP type permit.

MR. LEU: -- permit as opposed to an actual permit as far as North Dakota goes.

MS. CHAMBERS: Right.

MS. WILLIAMS: So do you have any produced water permits that deal with the gel and the foam and --

MS. CHAMBERS: We don't regulate the injection of material, and that's the other couple fold I was going to kind of get into.

MS. WILLIAMS: But the withdrawal of stuff.

MS. CHAMBERS: The withdrawal of the depth, and withdrawal of the materials, and that's where they need permit coverage.

MS. WILLIAMS: Do you have any permits that are the withdrawal of --

MS. CHAMBERS: No, because they're not disposing of those, or disposing of that gel or material to State waters.

MS. WILLIAMS: They're injecting it.

MS. CHAMBERS: They're injecting it into injection wells, or disposing of it in, I'm assuming, approved landfills, or other kind of type practices that don't impact the Water Quality Bureau.

MR. LEU: In a lot of cases they can just reuse it as --

MS. CHAMBERS: Right, for storage, and use it later on.

MS. WILLIAMS: Because it had to be potable water that they were starting with. That's one of the issues.

MS. NEUMAN: No problem with that groundwater then?

MR. LEU: As long as you do proper well construction, it shouldn't affect groundwater.

MS. NEUMAN: I mean even after they pump it out, they do that?

MR. LEU: If they put it into a plastic lined pond or structure of that sort.

MS. NEUMAN: But if it goes over the top, like she was saying, it may even go underground for awhile before it would ever surface.

MR. LEU: And that potential exists.

MS. CHAMBERS: I don't think that's proper disposal. I guess I didn't follow the question. But they're pumping it through, and they're pulling it back out, and then they're storing it in a lined steel container, or a storage that they reuse, or do something differently. If they spill the material, and then

that does hit surface land, that ultimately could get down to groundwater or runoff into the surface water. That's a spill. That's not a managed practice that we would want to regulate.

And so that ties with the question with the hydraulic fracking or the impacts associated with that, that does fall under what is referred to as the Safe Drinking Water Act, and management of injection controls, underground injection of wells, if classified as a Class 2 injection well.

In Montana, the predominant entity that has regulation under the Safe Drinking Water Act for the UIC program, Underground Injection Control Program, is EPA. It is not delegated to the State of Montana. It's through the Federal Environment Protection Agency.

However, the Class 2 wells are primacy under the Department of Natural Resources under the Board of Oil and Gas. So in the State of Montana, there are portions of that act and the UIC program that they do regulate. They look at the MCLs, maximum contaminant levels, and impact to safe drinking water under that UIC program.

Then I don't have -- I don't know all of DNRC's regulation and impacts, but I wanted to

pass out, and that you could possibly look at more researching or get contacts associated with that.

Recently, September 2011, it actually was adopted I believe in August of 2011, where DNRC, Department of Natural Resources, enacted regulations that requires an operator to disclose information about hydraulic fracking fluid on a well-by-well basis.

So they are looking at where is the formation, what is the maximum pressure, type of fluid, what are they using, what's the fluid additive types, what's the MSDSs -- or Material Safety Data Sheet -- or the chemical extraction numbers based upon those additives, and then amount of -- how much they're actually putting in there.

So DNRC has at least taken initial steps I think within the State of Montana where this is ahead of the game nationally, based upon asking or getting disclosed information of the fracking fluid, so I think they're moving in the right direction based upon those regulations.

So that is the entity that would look at not only if they wanted to dispose of that hydraulic fracking fluid in a further deep

injection well, which would be maybe a Class 5 injection well for waste disposal, or EPA, or they would be the ones that would regulate the actual injection of fluid into the bottom layer for the fracking purposes; plus they're the ones that provide approval for mineral lease, mineral licensing, where can the wells be drilled, and give approval for the actual drilling of the wells, is the Department of Natural Resources.

Our air program has also a place in regulating the well. They do look at vapor issues associated with those wells and well heads, and ambient air conditions. And so they do require permits under the registrated oil and gas for the well location, so that we're not impacting air or impacts from that area based upon too many wells in the cumulative area, based upon eastern Montana.

So that's just the well and the fracking and some of that area. We do have some produced water permits, like I indicated, for actual surface water approval. Many of them manage the water that they separate out with land application or other practices that may not be surface water discharge.

But I wanted to kind of lead off on that, and jump a little bit into the oil boom in general, and the drilling of the wells and managing the water based upon these productions is one area; stormwater construction is another; and then the hydraulic fluid and the impacts that may impact Montana in the long run is another category.

But the industry in general, and that there is more people in eastern Montana than there has been in the past, and the infrastructure and impacts from man camps, not enough residences, not enough places for people to live, and how you manage that drinking water and wastewater source is having huger impacts, I think, on potential public health concerns and water quality impacts because you're not properly disposing of wastewater, or they don't have adequate drinking water supplies.

So there was a great article that we're trying to get ahead of the curve a little bit in Montana that I wanted to share. "North Dakota oil boom means a flood of new people, and money, and lots of new problems," and it's in this Governing Magazine. I just wanted to share that because I

think it's really, really interesting, and to know that we're trying to get a head start on it from Montana's viewpoint. But in the whole scheme of things, fracking, and the fracking fluid, and where the wells are drilled are one component of a possibly larger problem that we need to make sure we stay engaged on.

If you're interested, the Montana Association of Conservation Districts is holding a round table discussion on November 17th in the afternoon at 3:00 at the Department of Natural Resources and Conservation, and they've asked all the State regulatory agencies to talk about, with this oil boom, which portions of the problem or industry do we regulate, meaning I would talk about the portions that I would regulate under the Water Protection Bureau, and then DNRC would talk their portion that they would regulate, and we just would have an open forum to start laying out discussions and viewpoints, because the local conservation districts, local sanitarians, some of the cities, municipalities, City of Sidney, City of Glendive, are starting to have major impacts by septic dumpers, septic haulers, not enough hydraulic capacity in their lagoons or treatment

plants in order to handle all the connections.

So I think it's a good open forum to start laying out those areas, and having just general discussions, and then we can start seeing where there is holes or impacts, and I think it's going to be a pretty hot topic in the next legislative session.

MS. WILLIAMS: Where is that?

MS. CHAMBERS: It's at Department of Natural Resources.

MS. WILLIAMS: In Helena?

MS. CHAMBERS: If you're interested I can --

MS. WILLIAMS: In Helena?

MS. CHAMBERS: In Helena. I think it's going to be in Helena.

MS. WILLIAMS: On the 17th?

MS. CHAMBERS: At 3:00, yes, on November 17th. And I can forward that information to Bob, and he can get that sent out to the group. I haven't got the formal invitation from them, but I could possibly get that and find it.

MS. BUCKIN-SANCHEZ: I know North Dakota has had in place, and then in the last legislative session there, increased the percent, some kind of

tax on oil and gas, and that goes into a state fund to fund infrastructure. Is there anything like that in Montana?

MS. CHAMBERS: I don't know the specifics on how they're taxed or where that funding or revenue goes.

CHAIRMAN TYLER: Do you mean like the hard rock impact tax you're talking about?

MS. CHAMBERS: I know it goes probably back to those counties where that mineral lease or production is generated, just like the coal severance tax or some of those mineral rights lease issues. I don't think there is a separate fund designated yet in Montana for actual local infrastructure and improvements.

MS. WILLIAMS: We talked about creating -- and I've got my legislative hat on now -- but we talked about creating something like the coal trust, but we couldn't. Frankly we have a tax holiday, an 18 month tax holiday. In my mind, we had counties coming and talking about all the impacts, and we should have repealed the tax holiday, because we got all this information that said that the tax structure is not what is influencing where these companies locate. But it

didn't happen. To me, that's the first step. We also talked about some kind of trust, but they do pay royalties that goes to the State. It is just not -- We need to get that better figured out.

MS. CHAMBERS: It may not be a long term need, where you need to have infrastructure on some of those actual towns or communities, but we're looking at trying to encourage the industry to participate in setting up more actual man camps or facilities that are designed with proper housing, proper waste disposal, that may be more transient in nature, that after this boom digresses, it could be easily picked up and not impact Montana's -- the plains basically in that particular area.

We're also meeting internally, based upon the groups in the program that are most impacted by what's going on do there, so that we can get ahead of the curve on potential permit issues or providing outreach and education.

We're looking at a permitting road show to head to eastern Montana to start communicating what permits you would need, what's the way to get permits, help work with some of these landowners and businessmen that maybe have set up a 20 or 30

RV park in the back of their Pizza Hut, to get it actually properly permitted and get proper use of drinking water to those RVs, and get them the right set-up, and moving that forward, and communicating that if they take this route and get permit coverage, then enforcement won't follow necessarily.

But some of the egregious ones, maybe start with enforcement chain, but not have penalties, just to try to get the word out so that we can educate them on what's actually needed.

There is a couple horror stories out there that are interesting. In Glendive, there's a hotel that's regulated under public water supply for 30 users of this public water supply system, and there's 120 residents at the hotel and 20 RVs parked in the back of the facility, that's not able to manage the drinking water, and it's definitely not going to be able to manage all that wastewater.

So that's the stuff. And so some of these we may start with just to get everybody's attention in the area, and then see where that heads in the future. So I wanted to just get the full picture of what we're looking at, and all the

possible regulation. And I thought the article was very helpful on North Dakota, and trying to stay ahead of the curve.

And then there's impacts in North Dakota. North Dakota is turning away some of the produced water land application sites, some of the septic disposal land application, and they're trucking it across the border. So not only are we dealing with our own waste, we're dealing with some of North Dakota's waste.

MR. WENDLAND: We're suffering the impacts of their boom, too. They're located in Montana, and working over there, too, so --

MS. WILLIAMS: We're capitalizing on it, too. It's benefiting us, too.

MS. CHAMBERS: We're getting tax revenues. We just have to --

MR. WENDLAND: So those man camps, what are they doing for disposal of wastewater or --

MS. CHAMBERS: If they're set up properly, there is probably "X" number of RVs that go to one septic tank, that then ultimately goes to a drainfield. And if there is a certain amount of volume of those --

Like Keystone Pipeline that may run

through eastern Montana, they're coming in to talk about what permits are needed ahead of time, which is great. They're looking at a 1,200 person man camp, so that would be sized and designed to have an actual disposal for a drainfield that would have a groundwater discharge permit associated with it. So it would be just like a small subdivision out there on its own.

That would be the best solution, or if it's in town, they would have holding tanks, and then have a way to properly manage that septic. Either they could dump it at the municipality, or actually get a land, septic land application to have a proper place to dispose of it, and management through our Underground Tank Management Bureau, which manages septic haulers, and septic pumpers, and land application sites.

So we have permitting mechanisms and the ability to wrap our hand around this, and give them options to ensure they do it right. We just have to get the education out there.

MS. WILLIAMS: I would compliment the Department on trying to get ahead of this, because I went on one of these tours to Williston. Had dinner in a man camp. It was just amazing. Their

goal was 2,500 people to support in that man camp.

And a lot of the conversation was about how Montana is so much different than North Dakota or Wyoming, because North Dakota and Wyoming just sort of "get her done" kind of thing, and that Montana has all these layers of regulation that are really cumbersome.

And I think it's really important to get ahead of this, and not let those -- And I asked for specifics on what the issues were in Montana, and there was only one mention of a local issue finally. But there is this sentiment that Montana is very different, and that we're anti-business, and there is all kinds of barriers.

And so I think it's really important for the agencies to kind of get out there, and trying to figure out how we can both be protective, do things right, be facilitative to a point, but trying to address this sentiment out there that Montana is not friendly, and puts up barriers, because I think if --

I mean this is huge, and it is coming our way. It's already here. You can't get a hotel room in eastern Montana. Williston restaurants, they couldn't even get staff, so they

didn't have restaurants staying open because they couldn't pay them enough. I mean it's pretty amazing.

And I'm worried that if Montana is seen as throwing up road blocks, that there will be legislative proposals to reduce some of our protections. And so I think it's really imperative for agencies to get out in front, like it sounds like you are, and --

MS. CHAMBERS: I don't necessarily think that the regulations are already more stringent or different, or how we perceive that. I mean you get air permits and some water discharge permits quicker than you can in some of our neighboring states.

There are other laws in Montana -- you know, the work comp. We've heard issues in the community development within Sidney and Glendive last year in the legislative road show where the work camp issue and the Montana tax on work comp issues and some insurance were the reason why they weren't bringing workers in.

So there's an economic impact on development that gets -- I think just force to environment permitting and regulations, but there

might be other underlying issues associated with why they're not coming. But that's the basis, is just to get out there, and get some success stories with some of them, so that they can show, "No, that the process wasn't that bad, and we actually got a permit in a decent time frame," and it is no different than any of the other states.

We just want to ensure we're doing it right, which most of the companies want to do if they know what they need to do.

MR. LEU: It's usually only seen as a road block if you don't understand.

MS. WILLIAMS: Apparently there are now problems in North Dakota from things not being done correctly, which it's a huge education.

MS. CHAMBERS: We're going to learn from it, and we're not going to do the same thing.

CHAIRMAN TYLER: So when you see on the news, Mitch, somebody has a flame coming out of their sink, that's not from the -- what is that from? That's not what you put in to fracture the rock, correct? It is coming out.

MR. LEU: In looking at the Pennsylvania gas shale, I would come to the conclusion that it is not fracking that's doing it, it is poor well

construction. The only way there is a conduit between surface water and natural gas is if there is an open something. If you construct the oil well properly with concrete and steel, you can't get natural gas or water through concrete and steel, so there has got to be some conduit of some sort, like a bad concrete job, or bad casing job, or something like that. Fracking may exacerbate that, but the ultimate cause would be, in my opinion, bad well construction.

MS. CHAMBERS: But couldn't the fracking go horizontal, like we were talking about, and then impact a private landowner's drinking water well? Could that be -- But the depth is so much different. That's what I always struggle with is the depth.

MR. LEU: The issue is you've got drinking water at 300 feet, and you've got natural gas at 6,000 feet, and there is a whole heck of a lot of rock in between here and there, and you just can't get there without some sort of conduit to allow that.

CHAIRMAN TYLER: How does that stuff get on fire?

MR. LEU: Actually there is natural gas

in the drinking water somehow.

MS. WILLIAMS: Sometimes it's natural.

CHAIRMAN TYLER: Did somebody light a cigarette while they were brushing their teeth?

MS. CHAMBERS: Smoking and brushing their teeth at the same time.

CHAIRMAN TYLER: Aren't there stories of flames coming out of the water faucets?

MR. LEU: There is pictures in the news of flaming faucets.

MR. McNEIL: YouTube.

CHAIRMAN TYLER: I'm not a scientist, but how does that happen?

MR. McNEIL: We just hosted the Federal State Toxicology Risk Assessment Group here about a month ago, and we had a whole session on fracking. And those presentations are available online if you'd like to look at them. And we had the Director of the Risk Assessment Program from Pennsylvania at this conference, and she had a bunch of video, and some of that it is pretty scary.

One was a guy takes a lighter, turns on the water, puts it up next to the faucet, and it looks like an acetylene torch; and another one

where they had a casing that was cracked, and knew it was a problem, fluidized the ground around the structure, and the truck just sank into the ground. It just disappeared.

So there is a lot of information out there, and I strongly suggest if you have interest in some horror stories anyway, you go to the fast track site, and those presentations are all available online.

We had one of the guys, who is specialist in fracking from Cornell University, give a presentation. It was one of several presentations given. And they are looking at modeling the losses due to poor well construction affecting global warming because of the impacts of methane lost to the atmosphere; and the numbers that he had were just staggering.

There is a two part article in Nature Magazine -- which I have copies of and can give to Bob if anyone is interested -- talking about the pros and cons of horizontal drilling and fracking, and the risks that they create.

MR. BUKANTIS: So if the Council -- Would you like us to send that link out? Rod, why don't you get that to me and I'll send it out, and

we'll send that to Jenny.

MS. CHAMBERS: I'll get that one.

MR. BUKANTIS: And since we're throwing out suggestions, I just got the most recent issue of Scientific American, if anyone wants to pick that up at the newsstand or whatever, they have an article on fracking in that also.

MS. WILLIAMS: I have a power point from that tour in Williston -- I think that one was from the economic development director that is pretty interesting -- that I can share with the group as well. Did we have some public comment about this?

MR. BUKANTIS: We do, and --

MS. WILLIAMS: I didn't mean to get ahead on the --

CHAIRMAN TYLER: Are we through with the fracking discussion? There's probably more questions.

MR. LEU: Do you want a hand out?

MR. BUKANTIS: Yes.

CHAIRMAN TYLER: Are we through with the -- More questions for Mitch?

We can go 20,000 feet down and get oil, but I can't get health insurance. What's up with

that?

Public comment? Is there any public comment?

MR. BUKANTIS: I've got this public comment that Northern Plains Resource Council submitted to the Council today, and if you like, I could read this.

CHAIRMAN TYLER: Go ahead.

MR. BUKANTIS: "Thank you for the opportunity to present these comments. Northern Plains Resource Council and our affiliated organization, Cottonwood Resource Council, regret that we could not attend the meeting in person today.

"As many of you know, hydraulic fracturing or fracking is a process in oil and gas development that involves fracturing rock, and pumping toxic chemicals under high pressure into the ground. This process is used to release gas and oil from dense rock deep underground. Fracking is already being used in Montana in the Bakken in Northeastern Montana.

"Many of you may not know that there are deep gas fields in Park and Sweetgrass Counties that have been extensively leased. Three

exploratory wells have been drilled in Sweetgrass County and three in Park County.

"The chemicals used in fracking and in other stages of oil and gas development, many of which are hazardous to human health, can get into the groundwater and drinking water through a variety of ways, such as faulty casing, surface blowouts and spills, and faulty storage pits.

"Unfortunately, the chemicals in these fluids which can cause severe health problems are kept secret from the public. The Federal Safe Drinking Water Act was enacted in 1974 to protect quality drinking water in the United States and applies to all surface and groundwaters currently or potentially used for drinking water. In 2005, the SDWA was amended to exempt the oil and gas industry from disclosure or regulation of the chemicals used in fracking.

"There are many cases where fracking in oil and gas drilling have been connected to incidences of polluted water or impaired wells. Residents in Alabama, Colorado, New Mexico, Virginia, West Virginia, and Wyoming have reported changes, including cloudy or oily water, and loss of water quality following fracking operations

near their homes. In Pavilion, Wyoming, the Environmental Protection Agency has found fracking chemicals in three residential wells, and eleven wells have trace contaminants of oil and gas and metals.

"The draft rules that the Board of Oil and Gas Conservation approved on August 10, 2011 set an important precedent in the way our state deals with oil and gas development. However, from our review, we believe that they fall short of protecting water quality, public health, and landowner rights.

"The rules do not require full public disclosure. The industry is still allowed a trade secret exemption. With this rule in place, at best only 20 percent of chemicals used will be publicly disclosed. In order to find information on this 20 percent, it will require digging up documents from the BOGC at their office and at the county health organizations that compile OSHA documents.

"Also, without a public website set up to compile the chemicals used in Montana, interested parties will have a very difficult time locating chemical information. The rules exempt

operators from disclosing the chemicals they use if they post to an industry run website (FracFocus). At this point, out of the 10,000 oil and gas wells in Montana, only eleven wells are listed on the website, and the majority of these list the chemicals as proprietary on the disclosure form.

"The rules do not allow time for landowners to do baseline testing. Companies are required to submit partial chemical information only 48 hours in advance of a well being fracked. This leaves no time for landowners to test their wells, and without any specific chemical information, they don't know what the tests were either.

"Public disclosure should not be a controversial issue. Of the approximately 212 comments received during the public comment period, 192 were in favor of stronger rules that protect the public and our water supplies.

"As an advisory committee on water pollution, you all should know the entire story behind our concerns about fracturing. Luckily there are concrete steps that the committee could take today.

"The EPA recently published information on effluent limitation guidelines for fracking and shale gas. There is a comment deadline of November 25th. Any and all comments supporting these proposed rules, as well as providing suggestions on them would be helpful.

"If passed, we believe the DEQ would have an important role in implementing these rules. Our agencies in Montana needs to ensure that our water quality is protected pollution from the oil and gas industry, so that our number one economy of agriculture can continue to thrive.

"Please contact Becca at Northern Plains if you have any questions," and it has the phone number.

MS. WILLIAMS: In talking about this, Jenny, are you aware of the EPA comment topic?

MS. CHAMBERS: Yes, I am, and for clarification, that statement on the comments is not exactly correct. So I'd just frame it a little bit. It's great that they've noticed and they're taking part, and possibly just submitting comments for Montana are based upon their concerns to the federal level, so that's good to know.

But the recently published information

is disclosure where EPA has asked for feedback and comment on looking at moving forward with the development of federal effluent limit guidelines for certain industry and subsectors.

Federal effluent limit guidelines are a minimal level of treatment requirements and establishment of technology based effluent limits, based upon a certain industry sector, and the area that they're looking at predominantly is coal bed methane. So it is the separation of the water, and how it needs to be treated, and what the technology based effluent limits would be prior to direct disposal or discharge back to State surface waters.

So it really doesn't have anything to do with the injection of the hydraulic fluid down into the ground, which is under the Safe Drinking Water Act. Federal effluent limit guidelines are under the Clean Water Act, and it's a minimal level of treatment needed for that industry prior to disposing of that wastewater to State surface waters.

So they're looking -- EPA is currently looking at moving forward with coal bed methane effluent limit guidelines and a couple other

industry sectors which are not natural gas or production. It is steam electrical generating power plants and some other energy development categories.

MS. BUCKIN-SANCHEZ: So it's a guideline not a permit?

MS. CHAMBERS: They're called effluent limit guidelines, but they are not guidelines. Once they get promulgated in rule, each subsector within that Clean Water Act federal regulations establish for these industries, based upon Best Available Control Technology, or if it's new source, new source performance, kind of like an engineering design of how they can treat that wastewater, you would develop and have this level of effluent limit that would come out.

So it would state, "These are the parameters of concern, this is the minimal level of treatment, and these are your actual permit types and discharge permit limits that have to be imposed in that permit." So it is a guideline, meaning when you're moving forward with that industry, you'd better ensure that your design and operation can meet those minimal treatment levels under a technology based effluent limit.

MS. BUCKIN-SANCHEZ: It's a guideline for a permit?

MS. CHAMBERS: It is a guideline for the industry, because in my permit, I have to put that regulation in there.

MR. HOEHNE: Is there limits more stringent than the State of Montana?

MS. CHAMBERS: Right. There's a two fold test. I look at technology based effluent limits, which are either effluent limit guidelines -- which are effluent limit guidelines, or best professional judgment if there are no effluent limit guidelines promulgated by the federal EPA; and then I look at also water quality based effluent limits.

So I compare -- let's say there was an effluent limit guideline for copper, but we also have a copper water quality standard, that would trump that and make it more stringent. I would apply the one that was the most stringent. So it is either/or.

MS. WILLIAMS: Is it possible -- and I'm glad she triggered a memory that I've been thinking of. We've been faced with this several times. And I don't think it would be Jenny's

program, but maybe it's your program, Bob.

Would it possible to create some guidance on how a homeowner could sample their well, and generate baseline information that wouldn't be cost prohibitive? I think that is one thing that people are so worried about, is that they don't know what to do to protect themselves, whether the concerns are legitimate or not.

MR. BUKANTIS: I've got some thoughts and maybe I'll throw them out there first. Actually, you've worked in the drinking water program, right? Yes. So I'm sure you're more qualified to answer this question.

MS. CHAMBERS: Yes. It falls under the Safe Drinking Water Act, which are public water systems, so 25 service connections or more would have a -- if it's a community system, they would have screening, and background, and baseline samples associated with what would be contaminant levels of concern, either on an every year basis, every three year, every nine year rotation.

MS. WILLIAMS: I guess I'm thinking it's individual.

MS. CHAMBERS: But individual homeowners would not have that same criteria for the baseline

sampling. However, there is information on our website under the Public Water Supply Program on how to sample, and what you should look for in your individual residence well; plus up in Planning Division, there is a Source Water Protection Group that goes out and provides education and outreach to some individual homeowners, but it really predominantly lands to the local residents in those -- in that county, and to that county sanitarian on impacts.

But it would be pretty costly to screen for all constituents that may be a concern within that watershed; and if they're not predominantly currently looking at some of the public health concerns, which is nitrate, nitrite, and E. coli or bacteria samples currently, I guess I would support the fact that they would look -- first start there, before they start getting some chemical samples, or volatile organic compounds, or some of the chemical constituents.

MR. LEU: These are the cheap ones to look for.

MS. CHAMBERS: Yes. The cheap ones are the ones up front.

MR. LEU: As soon as you start getting

into VOC speciation, then the cost goes straight up.

MS. CHAMBERS: And the difference between acute contamination and chronic contamination, you could probably drink a contaminated well with some of the volatile organic compounds for a longer period of time before you start health impacts versus the nitrate, nitrite, and E. coli; not that that's a reason why not to do it, it's just the costly and the actual -- the potential for impacts associated with that.

MS. WILLIAMS: I just think if we could help them somehow, because we couldn't even get through any kind of landowner notification because the industry wants to be able to frack whenever they want to. So if there is something we could help them with, that would be good.

MR. LEU: I would think that might be a good thesis project for one of the universities is to do maybe some baseline out east of various places, and somebody might be able to do a doctorate on that on before and after.

MS. CHAMBERS: I think the Bureau of Mines and Geology has done quite a bit of

groundwater monitoring and sampling based upon that Bakken formation, knowing the depth of how far it was, like Rod indicated, and maybe they have something published on the Butte Bureau of Mines website. So I don't know specifically.

MR. LEU: That would put some more money behind that.

MS. BUCKIN-SANCHEZ: What about the data that forms the basis of the work that Rod enacted? The Department of Agriculture does that sampling? Granted it is not a lot of wells, but it is targeted, and a lot of it is north central or east.

MR. LEU: Most of what they're looking for is pesticides and herbicides.

MS. BUCKIN-SANCHEZ: But it's a VOC, a whole bunch of VOC's, isn't it?

MR. McNEIL: Some of them were VOCs. There's 41 permanent sampling wells throughout the state that the Department of Agriculture operates. They do surveys, and then they do targeted assays. Targeted assays are much more sensitive because they're specifically targeted for one pesticide. They have maybe 100 times the sensitivity of something like the VOC scans.

There is a USGS program that is using that same well system to do scans to see what's out there in general, and that's part of a national survey that USGS is conducting.

MS. BUCKIN-SANCHEZ: A piece of the puzzle.

MR. McNEIL: Yes.

CHAIRMAN TYLER: Bob, as I understand it, the rulemaking around this particular issue probably won't come through this particular board?

MR. BUKANTIS: Assuming you're referring to the Board of Oil and Gas, that's correct.

CHAIRMAN TYLER: I don't know if it's going to be on all of our plates.

MR. BUKANTIS: They're part of the Department of Natural Resources and Conservation.

MS. WILLIAMS: But I think Jenny's presentation was real helpful to -- I mean there is all kinds of water quality related facets to this, and if the fracking fluids are withdrawn and not reinjected, then it does relate to surface water at some point. So I think the idea of being -- getting ahead of the curve is advisable for all concerned.

MS. CHAMBERS: And any changes or

adoption of federal ELGs or requirements, we have to adopt, incorporate by reference, so you will see those as far as an advisory council on if we modify or change our regulations, based upon how we regulate predominantly surface water disposal based upon the federal regulations of any kind, runoff, stormwater runoff, direct discharge, or improper disposal of hydraulic fracking, if it is not just injected.

And she brought up the request or question on whether or not if -- Bob, did you have any inclination of what they meant, "Luckily there are concrete steps the committee could take"? I'm not sure what Northern Plains believes or thinks that this advisory council could possibly take, but I wasn't sure if you talked with them directly on getting more feedback.

MR. BUKANTIS: No, I think we exchanged a couple short emails, and I reminded them that the Department wasn't proposing any action, and that the Council's role was to advise the Department on stuff that we do, and so I'm not sure that way. I'm sure Becca would be happy to follow up with any questions if anyone wanted to follow up individually, or we could invite them to

a future meeting specifically if you wanted to hear more.

MS. CHAMBERS: If any of you wanted to contact her directly. I just wanted to --

CHAIRMAN TYLER: I actually did invite -- They called me and I invited them to come to the meeting and present, which I think this is. I think they're asking us to testify.

MS. WILLIAMS: They're asking us to comment on the EPA --

MS. CHAMBERS: That could be. Right.

MR. BUKANTIS: And so I guess you certainly can all do that as individuals, but that's not your role as a council because it is not a DEQ thing, if you would. It is someplace else in State government right now that the action is taking place.

MR. HOEHNE: Will DEQ be commenting on it?

MS. CHAMBERS: No, we probably will not. The federal ELG, when they promulgate those, are proposed to move forward with adoption of technology based effluent limits. The State normally does not weigh in.

And the one that they're proposing

predominantly is coal bed methane. And if you followed some of the past four or five years with some of the Supreme Court rulings, and the leg work that my shop did on imposing our own best professional judgment and minimal treatment requirements for that industry, we are currently more stringent than our neighboring states within the region.

So I guess I'll let EPA hash through that process to see where they land, and if they meet somewhere in the middle, then that's where they meet, or maybe they'll take Montana's approach. I'm not sure. I don't anticipate they would go more stringent than where we're currently at. So we're not going to be providing comments or weighing in, but we'll certainly watch the process and see how it unfolds.

I know our industry group in Montana will probably provide their own comments, but there is always the water quality balance between is it still protective for our state, and luckily we have some state water quality standards that would predominantly be on the books to protect that beneficial uses if those regulations changed, so --

CHAIRMAN TYLER: Is there public comment?

Mitch, thanks, and thank you, Jenny. That's definitely coming down the pike. I hear from farmers that are either getting completely sideswiped because they don't own the minerals, or they're skipping down to the bank every day with a nice big check. It is pretty wild.

Any other public comment?

(No response)

CHAIRMAN TYLER: Do we have any agenda items for next meeting?

MR. BUKANTIS: Certainly next year's calendar. And do you have any rulemaking coming up?

MS. CHAMBERS: We may or may not be ready for January, but definitely January or March revisions to Subchapter 13. As I indicated before, we're in a four or five phase process to update our Montana Pollutant Discharge Elimination System rules.

Subchapter 12 was successful. It went through the rulemaking process, and it's now currently on the books. So instead of a 1980 reference incorporated by reference, we're

currently in 2010, so that's reassuring. We just need to do the same thing through Subchapter 13 and so on, which also includes updating our application portion, so expect that January/March time frame, or the first half of calendar year 2012.

CHAIRMAN TYLER: Thanks, Rod. Thanks, Jenny. This was a good meeting. We're all wrapped up here? Motion to adjourn?

MR. SELCH: Motion.

CHAIRMAN TYLER: Second.

MR. HOEHNE: Second.

CHAIRMAN TYLER: All in favor?

(Response)

(The proceedings were concluded at 12:38 a.m.)

* * * * *

C E R T I F I C A T E

STATE OF MONTANA)
: SS.
COUNTY OF LEWIS & CLARK)

I, LAURIE CRUTCHER, RPR, Court Reporter, Notary Public in and for the County of Lewis & Clark, State of Montana, do hereby certify:

That the proceedings were taken before me at the time and place herein named; that the proceedings were reported by me in shorthand and transcribed using computer-aided transcription, and that the foregoing - 106 - pages contain a true record of the proceedings to the best of my ability.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my notarial seal this _____ day of _____, 2011.

_____

LAURIE CRUTCHER, RPR
Court Reporter - Notary Public
My commission expires
March 9, 2012.

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